SEEKING PUBLIC INPUT ON PROPOSED ACTION:
2015 USDA Idaho Grasshopper and Mormon Cricket Suppression Program

Purpose and Need - Grasshoppers and Mormon crickets are part of a vast complex of native rangeland insects that play important ecological roles in nutrient recycling by reducing plant material through their digestive process, and serving as food for other animal species. However like many insects, they have the potential for sudden and explosive population increases resulting in outbreaks. When outbreaks occur, grasshoppers and Mormon crickets can destroy the forage needed by wildlife and livestock. By consuming plants, they can reduce the shelter habitat for rangeland birds, mammals and reptiles. They may consume threatened and endangered plants. Outbreak populations can also invade cropland and damage or destroy cultivated crops. Approximately 40 species of grasshoppers (including Mormon crickets) occur in Idaho. Of these, five species reach outbreak status in limited areas on a fairly frequent basis. They are: migratory grasshopper, valley grasshopper, bigheaded grasshopper, clearwinged grasshopper, and Mormon cricket.

U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS) conducts surveys to determine the density and species composition of grasshopper populations on rangelands. In Idaho, surveys can begin as early as February and may extend into September each year. Surveys can determine current population densities and trends, but they do not provide precise predictive capabilities for coming years.

Although research has demonstrated that grazing management practices may reduce grasshopper outbreaks in tall and short grass prairies, outbreaks cannot reliably be prevented with rangeland management practices in Idaho's sagebrush steppe. Therefore, when outbreaks occur, they may require direct intervention to suppress the population density. APHIS has authority under The Plant Protection Act of 2000 (7 USC §7701 *et seq*.) to conduct the suppression program on federal, state, and private lands. Subject to availability of funds and upon the request of the land managers and/or Idaho State Department of Agriculture, APHIS is charged to provide a rapid and effective response to outbreaks. The strategies used by APHIS for grasshopper and Mormon cricket suppression involve the use of insecticides which may be applied by air or ground.

History - In the mid-20th century APHIS conducted large area grasshopper suppression programs in Idaho and other western states. The goal of those programs was to reduce grasshopper populations to the greatest extent possible. Persistent, broad spectrum insecticides were applied to blocks of rangeland that exceeded tens of thousands of acres. By the 1970's persistent insecticides were replaced with new generations of non-persistent, broad spectrum insecticides. Now non-persistent selective insecticides are available for use in most cases, and the goal is to reduce the number of grasshoppers and Mormon crickets to levels that no longer pose a threat to agricultural lands and natural resources. The maximum acreage APHIS ever treated in Idaho was in 1985, when approximately six million acres were treated, primarily with Malathion. In recent years APHIS has treated the following acreages for grasshoppers and Mormon crickets:

2004 - 21,465 acres 2005 - 70,914 acres 2006 - 34,720 acres
2007 - 7,405 acres 2008 - 5,270 acres 2009 - 24,180 acres
2010 – 47,383 acres 2011 - 50 acres 2014 - 85 acres

All these treatments were on federally managed rangelands. In 2012 and 2013 APHIS did not conduct any treatments.

To meet National Environmental Policy Act requirements, APHIS published Rangeland Grasshopper and Mormon Cricket Suppression Program Final Environmental Impact Statement – 2002 available at: http://www.aphis.usda.gov/plant_health/ea/grasshopper_cricket.shtml. Additionally, APHIS prepared an Environmental Assessment for grasshopper and Mormon cricket suppression programs in Idaho in 2014. This is available at:

http://www.agri.state.id.us/Categories/PlantsInsects/GrasshopperMormonCricketControlProgram/ghprogramenvirodocs_pubs_reports.php.

Proposed Action - Subject to available funding and stipulations of the Plant Protection Act, APHIS would respond to requests from land managers for grasshopper/Mormon cricket suppression projects. APHIS would conduct evaluations to determine if populations warrant suppression. The evaluation would include species composition, population density, stage of grasshopper development, value of resources threatened by the grasshopper outbreak, and environmental risks associated with treatments.

The project area is federally managed rangeland in southern and western Idaho. The traditionally treated areas are in southern Idaho, primarily in the Great Basin Ecoregion. The elevation varies from below 3,000 feet in areas along the Snake River Plain to nearly 8,000 feet in mountainous regions. Essentially all of the area drains to the Pacific via the Snake River and its tributaries. Except for the Snake and its major tributaries, many of the streams in the area are generally intermittent. The plains and foothills are semi-arid sagebrush steppe. The rangelands are utilized for cattle and sheep grazing. They provide habitat for native and introduced game and non-game animal species. They are in an accelerated state of ecological change due to invasion by exotic plant species, changes in fire patterns, and intervention by humans.

A limited number of insecticidal treatment options are available to APHIS. They include up to:

16.0 fl. oz. Carbaryl spray per acre (0.50 lb. active ingredient)
10 pounds 5% Carbaryl bait per acre (0.50 lb. active ingredient)
8.0 fl. oz. Malathion spray per acre (0.62 lb. active ingredient)
1.0 fl. oz. Diflubenzuron spray per acre (0.016 lb. active ingredient)

Only one insecticide would be used in a treatment and no more than one treatment per year would normally be applied at any location.

Alternatives currently under consideration

Alternative 1 – No Action:

APHIS would not conduct insecticide treatments or any other grasshopper/Mormon cricket suppression measures.

Alternative 2 – Crop Protection Program:

Upon evaluation of the population density and environmental conditions, APHIS might conduct insecticide treatments with Carbaryl bait, or Diflubenzuron spray, or Malathion spray to suppress grasshopper/Mormon cricket outbreaks. Grasshopper treatments would be limited to within one mile agricultural cropland. Mormon cricket treatments would not be limited to within one mile of agricultural cropland.

Alternative 3 – Rangeland Grasshopper/Mormon Cricket Program:

Upon evaluation of the population density and environmental conditions, APHIS might conduct insecticide treatments with Carbaryl bait, or Diflubenzuron spray, or Malathion spray to suppress grasshopper/Mormon cricket outbreaks. Grasshopper or Mormon cricket treatments would **not** be limited to within one mile of agricultural cropland.

Discussion of Alternatives - Carbaryl spray is effective against grasshoppers and Mormon crickets in cooler parts of the year. However it has broad spectrum activity against many arthropods, especially bees and other pollinators. APHIS would not choose Carbaryl spray as an alternative because Diflubenzuron spray provides adequate early season suppression without the additional environmental hazards of Carbaryl spray.

Carbaryl bait is the most expensive and logistically demanding option currently available to APHIS. It is long-lasting and will have some suppressant effect on almost all target species of grasshoppers. It can be highly effective against Mormon crickets because of their habits of marching across broad stretches of rangeland and their flightless condition. It is slow acting on some species of grasshoppers. It is applied as solid bait pellets, from aircraft or ground application units. It has to be ingested to be fatal to insects and is intermediate between Diflubenzuron and Malathion in the range of insects that it will kill. When ingested, it disrupts the nervous system of the consumer. It may control immature and adult grasshoppers and Mormon crickets.

Diflubenzuron spray is the most pest-specific, lowest toxicity, and lowest cost option currently available to APHIS. It is applied as a liquid spray and is effective on insects which eat the foliage where it settles. It is essentially nontoxic to adult arthropods and to species other than arthropods. It disrupts the formation of chitin in the exoskeleton of arthropods and kills by preventing the formation of a new exoskeleton or shell when the consumer molts. Diflubenzuron must be used while the target is immature.

In Idaho, US Fish and Wildlife Service has indicated a preference for Diflubenzuron whenever possible as the agent of choice for grasshopper/Mormon cricket suppression. Diflubenzuron is essentially nontoxic to honey bees and most wild pollinators.

Malathion spray is the fastest acting, and least logistically demanding option, but it is a broad spectrum insecticide. It is applied as a liquid spray and kills insects and other arthropods on contact. It works by disrupting the nervous system of immature and adult insects. It will control adult and immature grasshoppers and Mormon crickets. APHIS would propose to use Malathion only when Diflubenzuron or Carbaryl bait would be ineffective or logistically infeasible.

Under Alternative 1 – No Action: damage to rangeland forage and habitat and crops might be severe if grasshopper or Mormon cricket outbreaks occur.

Under Alternative 2 – Crop Protection Program: damage to rangeland forage and habitat might be severe if exceptionally severe grasshopper outbreaks occur. Some damage to crops might be expected if exceptionally severe grasshopper outbreaks occur.

Under Alternative 3 – Rangeland Grasshopper/Mormon Cricket Program: damage to rangeland forage and habitat would be reduced as a result of grasshopper suppression. Risk of crop damage would be minimized versus Alternatives 1 and 2. Some reduction in arthropod biodiversity might result if extensive areas were to receive treatment, but RAATs applications would minimize such losses.

Public Comments:

Please submit comments to:

USDA APHIS PPQ
9118 West Blackeagle Drive
Boise ID 83709

They may also be faxed to: 208-378-5794.

E-Mail comments to: Brian.L.Marschman@aphis.usda.gov

Comments received before the completion of the environmental analysis/analyses will be considered. In order to complete the analysis in a timely manner we ask that comments be submitted by December 25, 2014. Comments received in response to this proposed action will be available for public inspection at our office and will be released in their entirety if requested pursuant to the Freedom of Information Act.